

APPARATUS AND METHOD FOR AN ULTRASONIC MEDICAL DEVICE
OPERATING IN A TORSIONAL MODE

ABSTRACT

5 The present invention provides an apparatus and a method for an ultrasonic medical
device operating in a torsional mode to treat a biological material. An ultrasonic probe of the
ultrasonic medical device is placed in communication with the biological material. An
ultrasonic energy source is activated to produce an electrical signal that drives a transducer to
produce a torsional vibration of the ultrasonic probe. The torsional vibration produces a
10 rotation and a counterrotation along the longitudinal axis of the ultrasonic probe that creates a
plurality of torsional nodes and a plurality of torsional anti-nodes along a portion of the
longitudinal axis of the ultrasonic probe resulting in cavitation along a portion of the
longitudinal axis of the ultrasonic probe comprising a radially asymmetric cross section that
ablates the biological material.

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